

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF TEXAS
WACO DIVISION

LED WAFER SOLUTIONS, LLC §
Plaintiff, §
v. § Civil. Action No. 6:21-CV-00292-ADA
SAMSUNG ELECTRONICS CO., LTD., §
SAMSUNG ELECTRONICS AMERICA, §
INC. §
Defendants, §
and §
SEOUL SEMICONDUCTOR CO., LTD., §
Intervenor-Defendant. §

**LED WAFER SOLUTIONS, LLC'S
RESPONSIVE CLAIM CONSTRUCTION BRIEF**

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I. INTRODUCTION

LWS alleges that Defendants infringe one or more claims of U.S. Patent Nos. 8,941,137 (the “‘137 Patent”), 8,952,405 (the “‘405 Patent”), 9,502,612 (the “‘612 Patent”), and 9,786,822 (the “‘822 Patent”) (collectively, the “Asserted Patents”).

Pursuant to the Court’s Amended Scheduling Order (Dkt. 38), Plaintiff LED Wafer Solutions, LLC (“Plaintiff” or “LWS”) submits the following Responsive Claim Construction Brief.

II. LEVEL OF ORDINARY SKILL IN THE ART

A person having ordinary skill in the art at the time the earliest applications for the Asserted Patents were filed would have had a bachelor’s degree in electrical engineering, or a similar discipline, with one to two years of experience in the field of LED packaging design.

III. LEGAL PRINCIPLES OF CLAIM CONSTRUCTION

This Court is familiar with the law of claim construction and Plaintiff will forego any recitation of underlying legal principles.

IV. “OPTICALLY DEFINABLE MATERIAL”

The parties dispute whether the claimed “optically definable material,” which appears in claim 1 of the ’137 and ’405 Patents, requires construction. Construction is necessary to clearly define the location and functionality of the optically definable material, which are both critical to the stated objectives of both patents. Because there is a dispute over the scope of this claim term, it must be construed by the Court; merely adopting an unspecified “plain and ordinary meaning” as Defendants propose would be insufficient. *See, e.g., Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1319 (Fed. Cir. 2016) (overturning a district court’s adoption of the “plain and ordinary meaning” for a claim term because that “left [a disputed] question of claim scope unanswered”). LWS’s construction is consistent with the intrinsic evidence and Federal Circuit law and would help clarify to the jury the proper scope of this claim term.

First, the location of the optically definable material must be within or adjacent to the optically permissible layer in order for the semiconductor device to function properly. While claim 1 of the '137 Patent specifies that the “optically definable material” is “proximal to or within said optically permissible layer,” the claim does not specify its location. But the applicant made clear in the specification of both the '137 and '405 patents that the optically definable material can be within or contiguous (i.e., adjacent) to the optically permissible layer and not merely “proximal to”: “*Within, or contiguous to* transparent or optically permissible adhesive layer 640 is a region containing phosphor and/or quantum dot material (QD) 645.” '137 Patent, 5:1-3 (emphasis added); '405 Patent, 5:16-18 (same). This placement is necessary because, as the applicant explained, the optically definable material can achieve “color (wavelength) control and emission of selective desired light out of the LED device” when the “photons emitted from LED layer 600 travel through said optically transparent adhesive layer 640” and the optically definable layer. '137 Patent, 5:3-8; '405 Patent, 5:18-23. These objectives can occur if the optically definable material is located not only within the optically permissible layer but also adjacent thereto. Exhibit A, ¶¶26-27 (Declaration of Charles Hunt).

Adopting Defendants’ proposed construction would impermissibly broaden at least one aspect of claim 1 of the '405 Patent—permitting the optically definable material to be placed anywhere, and impermissibly narrow claim 1 of the '137 Patent—permitting the optically definable material to be located only within the optically permissible layer. Such a construction is incorrect and is contrary to settled Federal Circuit law. *See, e.g., Inpro II Licensing, S.A.R.L. v. T-Mobile USA, Inc.*, 450 F.3d 1350, 1354 (Fed. Cir. 2006).

Second, the term requires construction because the functionality of the optically definable material is critical to achieve the objectives of the patents. Defendants’ argument that LWS’ proposed construction “improperly broadens” claim 1 of the '405 Patent because the claim specifies that the optically definable material “change the frequency of at least some of emitted light” is not supported. '405 Patent, cl. 1. As the specification explains, when “photons emitted

from LED layer 600 travel through said optically transparent adhesive layer 640 and the region containing the phosphor and/or quantum dots 645[,] . . . [t]his causes color (wavelength) control and emission of selective desired light out of the LED device.” ’137 Patent, 5:1- 8; ’405 Patent, 5:16-23. Put simply, the characteristics of emitted light are *changed* by passing through the optically definable material. A person of ordinary skill in the art (“POSITA”) would understand this process to include a change of frequency of at least some of the emitted light as claim 1 of the ’405 Patent specifies, but would also understand that the optically definable material may change other characteristics of the emitted light, such as color. Exhibit A, ¶28.

Defendants’ argument that the prosecution history of the ’405 Patent limits the claim is not persuasive. The applicant did not disavow claim scope. *See, e.g., Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1357 (Fed. Cir. 2004) (“A applicant may claim an invention broadly and expect enforcement of the full scope of that language absent a clear disavowal or contrary definition in the specification.”). The applicant amended claim 1 of the ’405 Patent during prosecution—not to limit the placement of the optically definable material, but rather to overcome a rejection by the examiner concerning the location and relationship of the claimed layers as explained in the September 15, 2014, Applicant Initiated Interview Summary:

Attorney Hallai submitted proposed amendments for discussion. The Examiner reviewed these amendments with Primary Examiner Mary Wilczewski. In the interview, the Examiner indicated these proposed amendments. Although more clearly describing this invention, still do not overcome the applied prior art and suggestions were made regarding Applicant's Fig. 10 to include *additional limitations to describe the relationship of the passivation layer with the surrounding/contacting layers (e.g., the LED, sapphire substrate, and layer 1030) as well as the angled shape of the passivation layer*. If amended to more clearly describe features of the passivation layer (1070) shown in Fig. 10, this would overcome the applied prior art (Yoo and Chakraborty).

Exhibit B at 74. The applicant further explained that Yoo did not teach or suggest “an optically permissive layer in direct contact with said sapphire layer” because Yoo’s thin film layer of a fluorescent material was formed on the passivation layer and not in direct contact with the sapphire

layer as the '405 Patent claims require. Exhibit B at 57 (2014-09-22 Applicant Arguments/Remarks Made in an Amendment at 11. The amendments Defendants rely upon thus do not amount to a clear intention to limit the scope of the “optically definable material” as located only within the optically permissible layer. *See Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (“Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the applicant has demonstrated a clear intention to limit the claim scope). The Court should therefore this term as “a material within or adjacent to the optically permissible layer that changes an optical characteristic of emitted light.”

V. “COVERING AT LEAST A PORTION OF THE ABOVE COMPONENTS”

The parties do not dispute that the phrase “the above components” includes: (1) for the '137 Patent, the semiconductor LED, the conducting support layer, the optically permissible layer, and the optically definable material; and (2) for the '405 Patent, the semiconductor LED, the electrically conducting metallization layer, the sapphire layer, and the optically permissible layer.¹ The parties disagree, however, over whether the claims require that the optically permissible [flat] cover substrate must cover at least a portion of all of “the above components” and whether further clarification is necessary concerning the purpose and functionality of the cover substrate. LWS’ proposed constructions are consistent with established law as well as the syntax of the claim language, the specifications, and the prosecution history.

A. The Claimed Cover Substrate May but Need Not Cover “At Least a Portion Of” All “Of the Above Components.”

The syntax of the claim language, which states “at least a portion of the above components” supports LWS’s construction. If the applicant wanted to claim that all components are either fully or partially covered by the cover substrate as Defendants propose, he would have claimed

¹ Defendants raised this claim term initially only in the context of claim 1 of the '137 Patent and LWS proposed a construction for that claim term only. LWS does not contest that “the above components” in the context of claim 1 of the '405 Patent includes the semiconductor LED, the electrically conducting metallization layer, the sapphire layer, and the optically permissible layer.

“covering at least a portion of all of the above components.” *See e.g., Pers. Web Techs., LLC v. Apple, Inc.*, 848 F.3d 987, 991 (Fed. Cir. 2017) (“The ‘at least some’ language makes it impossible to interpret the terms at issue to require use of ‘all’ of the data.”). But the claims are not that restrictive. The plain and ordinary meaning of “at least a portion of” may include the whole but does not require it. *See, e.g., Quantum Corp. v. Rodime, PLC*, 65 F.3d 1577, 1581 (Fed. Cir. 1995) (“[T]he term ‘at least’ means ‘at the minimum.’”). Defendants’ proposed construction improperly renders the term “at least” meaningless. *See White v. Dunbar*, 119 U.S. 47, 52 (1886).

Defendants argue that the claims’ use of the term “the” in the phrase “the above components” supports their proposed construction that the cover substrate must cover a portion of each of the above components and not just one of those components. Defendants are mistaken and their reliance on *Harris Corp.* is misplaced. The claim at issue in *Harris Corp.* described “generating aircraft data,” “accumulating and continuously storing the generated aircraft data,” and then “transmitting the accumulated, stored generated aircraft data.” *Harris Corp. v. Fed. Exp. Corp.*, 502 F. App’x 957, at *5 (Fed. Cir. 2013). The *Harris Corp.* Court concluded that the term “transmitting the accumulated, stored generated aircraft data” referred to that same data set recited in the other limitations. *Id.* And, although the claim did not expressly require that “all” of the accumulated data must be transmitted, the Court noted that “it similarly lack[ed] any indication that some subset of the accumulated data should be transmitted.” *Id.*

Unlike the claim at issue in *Harris Corp.*, claim 1 of the ’137 and ’405 Patent expressly states that not all the above components must be covered by their use of the phrase “at least a portion of.” Also, unlike the *Harris Corp.* claim, the phrase “the above components” is not recited in the other claim limitations. Rather, “the above components” is merely specifying the universe of components of which one or more may be at least partially covered. LWS’ construction is consistent with how the phrase “at least a portion of” is commonly used. For example, a pavilion may cover “at least a portion of” the people at a park. Consistent with Defendants’ interpretation of this language, the pavilion would need to cover at least a portion of each and every person at

the park. Defendants’ proposed constructions should thus be rejected because the constructions improperly narrow the claims and render them “facially nonsensical.” *See Becton, Dickinson & Co. v. Tyco Healthcare Grp., LP*, 616 F.3d 1249, 1255 (Fed. Cir. 2010) (“A claim construction that renders asserted claims facially nonsensical ‘cannot be correct.’”) (citations omitted).

Finally, Defendants’ proposed constructions should be rejected because they unnecessarily import limitations from the specification into the claim elements. In particular, Defendants argue that “every figure” in the patents shows a cover substrate that covers “at least a portion of *each* of the components.” Dkt. 44 at 4-5 (emphasis in original). The mere fact of a particular embodiment being taught (or even “preferred”) is not sufficient to justify limiting otherwise broad claim scope to the particular embodiment taught. *See, e.g., Agfa Corp. v. Creo Prods., Inc.*, 451 F.3d 1366, 1376-77 (Fed. Cir. 2006) (finding that a claimed “stack” of printing plates was not limited to the particular horizontal stack shown in the specification); *Ormco Corp. v. Align Tech., Inc.*, 463 F.3d 1299, 1306-07 (Fed. Cir. 2006) (finding that a claimed “geometry” of orthodontic teeth was not limited to the geometries of orthodontics shown in the specification).

The figures disclosed in the patents disclose a particular way a cover substrate may be used, but these examples are not accompanied by any indication that the patentee intended to limit his claims in the manner Defendants propose. As the Federal Circuit has repeatedly held, “the fact that embodiments (or even every embodiment) in the specification depict a particular arrangement or structure does not require reading that arrangement or structure into the claims.” *Ethicon LLC v. Intuitive Surgical, Inc.*, No. 2020-1528, 2021 WL 3716397, at *4 (Fed. Cir. Aug. 23, 2021); *see also Aventis Pharma S.A. v. Hospira, Inc.*, 675 F.3d 1324, 1330 (Fed. Cir. 2012) (“[I]t is . . . not enough that the only embodiments, or all of the embodiments, contain a particular limitation’ to limit a claim term beyond its ordinary meaning.”) (citation omitted);

B. The “Cover Substrate” Functions To “Protect the LED From Degrading Properties (e.g., Moisture)”

According to Defendants, LWS’ proposed construction that the cover substrate functions to “protect the LED from degrading properties (e.g., moisture) is merely the intended goal or intent of the cover substrate. Defendants’ assertion lacks merit, and their reliance on *Innovative Display* and *USAA* is misplaced. The claim term at issue in *Innovative Display* recited a specific purpose of the claimed light source: “light source located directly behind said panel member for shining light through said panel member,” but Hyundai proposed that the term should be construed to mean: “designed to cause light to shine through the panel member.” *Innovative Display Techs. LLC v. Hyundai Motor Co.*, No. 2:14-CV-201-JRG, 2015 WL 2090651, at *26 (E.D. Tex. May 4, 2015). The court rejected Hyundai’s proposed construction because “[t]he disputed term is a limitation of the claim . . . [and Hyundai] failed to demonstrate that design intent is a necessary or appropriate claim limitation here.” *Id.*, *27. Similarly, in *USAA*, the defendant proposed that the term “submitting the check for [mobile check deposit]” be construed as “submitting the check *with the goal* of having it be deposited.” *United Servs. Auto. Ass’n v. PNC Bank N.A.*, No. 2:20-CV-00319-JRG, 2021 WL 5451020, at *19 (E.D. Tex. Nov. 22, 2021). The court rejected the defendant’s construction after stating: “PNC’s proposal of introducing a ‘goal’ into the construction is unclear, lacks sufficient support in the intrinsic record, and would tend to confuse rather than clarify the scope of the claims. *Id.*, at *19.

Unlike the proposed constructions at issue in *Innovative Display* and *USAA*, LWS’ proposed constructions are consistent with both the intrinsic and extrinsic evidence. Indeed, the function of a “cover substrate” is not merely a “goal” or “design intent” as Defendants contend, but rather essential to properly understanding the bodies of the claims. For example, a POSITA would understand that the purpose of applying a cover substrate over an LED device is to protect the LED from degrading properties, such as moisture. Exhibit A, ¶¶29-30. While the specifications do not mention the phrase degrading properties or moisture, they are nevertheless consistent with this understanding. *See, e.g.*, ’137 Patent, 5:13-17 (“The cover substrate 655 provides structural

presence and mechanical coupling for elements of the LED device 60. The cover substrate 655 is also transparent or optically permissive to light in the wavelength emitted by LED layer 600 and Phosphor layer.”).

In a May 21, 2015 Office Action during prosecution of the '405 Patent, the examiner recognized that a “cover substrate” functions to protect the degrading properties (e.g., moisture): “The LED would still be perfectly capable of generating light while *a “cover substrate” can be applied to cover said device while providing protection from damage*, a lens may be used to focus or extract light from the device, a material with low moisture permeability can be used to protect phosphors from degradation.” Exhibit B, 114 (emphasis added). Likewise, in a November 22, 2103, Office Action for the '137 Patent, the examiner recognized that the “cover substrate” functions to protect the device for protection from moisture:

The sealing layer (Fig 4J, 38) meets the limitation of an optically permissive cover (paragraph [0065]). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the sealing layer (38) of Fig. 4J with the device of Fig. 51 to include the additional layer (38) disposed between the wavelength conversion layer (25) and lens (27) for the added benefit of sealing the device for protection from moisture (paragraph [0065]).

Exhibit C, 77.

The examiners’ statements are not the “only references to adding a cover substrate ‘for the added benefit of sealing the device for protection from moisture’” as Defendants suggest. *See* Dkt. 44 at 6. The prior art cited on the face of both patents also describe the cover substrate’s functionality consistently with LWS’ proposed construction. For example, U.S. Patent Application Pub. No. 2009/0173958 (“Chakraborty”), which was cited by the examiner in the prosecution of both patents, discloses that the cover substrate provides mechanical and *environmental protection* for the semiconductor die. Exhibit D, [0003], [0063]. Similarly, U.S. Patent Application Pub. No. 2006/0006404 (“Ibbetson”), which was also cited by the examiner in the prosecution of both patents, discloses that a cover substrate “forms a hermetic seal above the diode for environmental

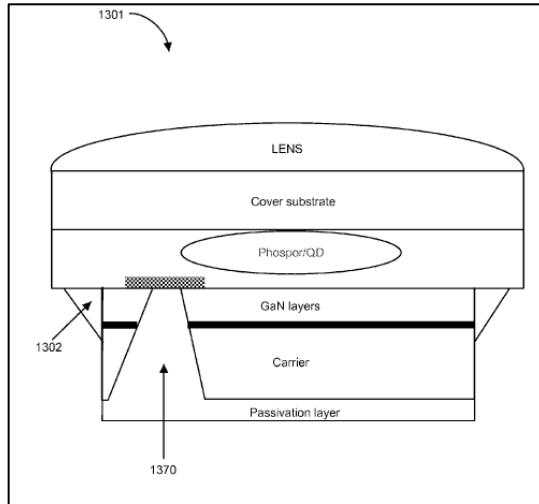
and mechanical protection. Exhibit E (“In some embodiments, a packaged light emitting device may further include a sealing layer on the reflective layer that forms a hermetic seal above the diode for environmental and mechanical protection.”).

For at least the foregoing reasons, the Court should adopt LWS’ proposed construction.

VI. “SAID SHAPED EDGE CONFIGURED TO REFLECT LIGHT GENERATED BY SAID LIGHT EMITTING DEVICE OUTWARDLY THEREFROM”

The phrase “said shaped edge configured to reflect light generated by said light emitting device outwardly therefrom” is easily understandable and does not require construction. This ordinary meaning does not require that light is reflected outwardly only from the “shaped edge.” There is no ambiguity to this term requiring construction, and a POSITA would understand from the claim language and other intrinsic evidence that light may be reflected outwardly more broadly from the device itself. Construing the term “therefrom” to refer to “shaped edge” only, as Defendants propose, would deviate from the term’s plain and ordinary meaning, conflict with the specification, and erroneously rewrite the claims. *See K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999) (“Courts do not rewrite claims; instead, we give effect to the terms chosen by the applicant.”).

There are no “internal inconsistencies” with this claim language as Defendants suggest (Dkt. 44 at 6), and Defendants’ attempt to define the propagation of light to be limited to reflecting light only from the “shaped edge” is unnecessary and inconsistent with the intrinsic evidence. Both the claim language and the specification make clear that the shaped edge provides optical reflectivity. But neither the claims nor the specification limits the light to be reflected outwardly only from the “shaped edge.” Indeed, both confirm that the applicant intended the meaning of this term to be much broader. The specifications themselves state that light is reflected outwardly from the device: “the passivation layer **1270** has been cut and dimensioned to expose a shoulder **1202** in the device, which can be shaped in a beveled or contoured or angled way as shown in FIG. 13 to provide a mirrored surface **1302** for reflecting light out of the light emitting device **1301**”:



'137 Patent, Fig. 13. *id.*, 6:61-66 (emphasis added). The specification further teaches that “shaped edge” can include the passivation layer or the shoulders of the device: “[t]he passivation layer **1370** or shoulders **1302** can be patterned in a manner to provide for example optical reflectivity by angling or shaping the edges of passivation layer **1370** or shoulders **1302Id., 6:66-7:3. But nothing in either specification indicates that light is reflected outwardly only from the shaped edge. Thus, although Defendants are correct in stating that the shaped edge functions to reflect the light generated by the light emitting device (Dkt. 44 at 7), a POSITA would understand based on these teachings that any such light is reflected outwardly from the device itself and not limited to being reflected outwardly only from the claimed “shaped edge.” Exhibit A, ¶32. There is simply no evidence to support a clear disavowal of claim scope such to narrow the claim in the manner Defendants suggest. *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1357 (Fed. Cir. 2004).**

VII. “A REQUIRED POSITION OF SAID DEVICE WITH RESPECT TO SAID OPTICALLY PERMISSIVE [FLAT] COVER SUBSTRATE”

The Court should construe “a required position of said device with respect to said optically permissive [flat] cover substrate” to mean “align the light emitting device with an optically permissive cover substrate to protect one or more components of the light emitting device.” LWS’

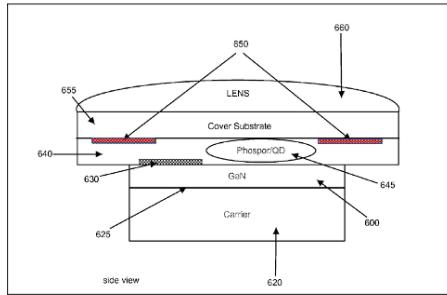
proposed construction is consistent with the intrinsic evidence and provides additional clarity to a fact finder, and a POSITA would understand with reasonable certainty what the applicant meant when he used the term “required position.” Defendants’ “indefiniteness” argument lacks merit and should be rejected.

According to Defendants, the term “a required position of said device with respect to said optically permissive [flat] cover substrate” is indefinite because (1) the claims and specifications fail to inform with reasonable certainty what constitutes a ‘required position’” and (2) the claims “nonsensically recite a position of a device relative to a component of that device.” Dkt. 44 at 8-10 (emphasis in original). Neither argument has merit. A claim is not indefinite “merely because it poses a difficult issue of claim construction.” *Exxon Research & Eng’g Co. v. United States*, 265 F.3d 1371, 1375 (Fed. Cir. 2001). “Only after a thorough attempt to understand the meaning of a claim has failed to resolve material ambiguities can one conclude that the claim is invalid for indefiniteness. Foremost among the tools of claim construction is of course the claim language itself, but other portions of the intrinsic evidence are clearly relevant, including the patent specification and prosecution history.” *All Dental Prodx, LLC v. Advantage Dental Prods., Inc.*, 309 F.3d 774, 780 (Fed. Cir. 2002). There are no material ambiguities with the term “a required position of said device with respect to said optically permissive [flat] cover substrate.” The claim language, specifications, and prosecution histories confirm this, and all this evidence is consistent with LWS’ proposed construction.

For example, the specifications of both patents disclose that alignment marks are used to properly align the optically permissive cover substrate over one or more components of the LED device:

One, two or more alignment marks 650 are provided on or in the transparent adhesive layer 630 and are used to align the LED body over a cover substrate 655 sheet and generally in an extended wafer structure during manufacture. The cover substrate 655 provides structural presence and mechanical coupling for elements of the LED device 60. The cover substrate 655 is also transparent or optically permissive to light in the wavelength emitted by LED layer 600 and Phosphor layer.

'137 Patent, 5:9-16; *see also id.*, 2:6-10 (“Some embodiments include a plurality of optically permissive layers, including an optically permissive cover substrate or wafer stacked over a semiconductor LED and positioned using one or more alignment markers”). The alignment marks 650 (red) are shown below in Figure 6:



Id., Fig. 6 (annotated).

The use of alignment marks to position a cover substrate in “a required position” was known in the art at the time, and a POSITA would understand this term with reasonable certainty. Exhibit A, ¶¶34-35. Indeed, during prosecution of the application that led to the '137 Patent, the examiner recognized that alignment marks were known to enable “precise positioning and registration of the device components during assembly”:

This is because the use of alignment marks would enable precise positioning and registration of the device components during assembly. The use of alignment marks for the purpose of aligning components during assembly is well known in the art and using a known feature for its known purpose would be obvious.

Exhibit C at 15 (2013-11-22 Non-Final Rejection).

Other intrinsic evidence confirms this as well. Indeed, the prior art cited by the examiner during prosecution of the patents shows that it was known at the time to use alignment marks in order to align the LED device with a cover substrate. For example, U.S. Patent Appl. Pub. No. 2010/0053929 (Bisberg) discloses “fiducial mark 36” and “fiducial mark 146” for alignment of the cover plate assembly over the semiconductor device:

FIG. 11C shows cover plate subassembly 102(4), FIG. 11B, coupled with PCB 40(5), FIG. 11A, to form PCB assembly 200(5). Since cover plate 100 is transparent, most elements shown in FIG. 11A and FIG. 11B remain visible, but

conductor 110 is opaque, hiding conductive epoxy 140, frontside contacts 34 and one instance of fiducial mark 36 in FIG. 11C. Alignment of cover plate subassembly 102(4) to PCB 40(5) includes aligning fiducial mark 146 (FIG. 11B) to fiducial mark 46 (FIG. 11A) so that fiducial mark 46 is also hidden beneath fiducial mark 146 in FIG. 11C.

Exhibit F, [0054]; *see also id.*, [0035] (“Other features may also be formed on substrate 45, for example fiducial marks may be formed for later use in aligning LED chips 30, or cover plate subassemblies (see for example FIG. 6A, FIG. 6B, FIG. 9B, FIG. 11B, FIG. 12C and FIG. 14C) with PCB 40(1).”). These alignment marks 36 and 146 are shown in Figure 11C.

Id., Fig. 11c. All of this evidence confirms that the term “required position” is not indefinite because a POSITA would understand that the term means align the light emitting device with an optically permissive cover substrate” as LWS proposes.

Finally, a POSITA would further understand that proper alignment of the cover substrate is necessary in order to “align the light emitting device with an optically permissive cover substrate to protect one or more components of the light emitting device.” Exhibit A, ¶¶36-37. Defendants’ argument that LWS’ “construction injects an unsupported purpose into the claims” lacks merit for the reasons discussed above in Section III.B, which is incorporated herein by reference.

For at least the foregoing reasons, the Court should adopt LWS’ proposed construction.

VIII. “LIFTING OFF SAID SUBSTRATE FROM SAID LED; FORMING A METAL PAD ON THE NEWLY EXPOSED LED SURFACE”

LWS does not dispute that the “lifting off said substrate from said LED” step must occur before the “forming a metal pad on the newly exposed LED surface” step. The parties disagree, however, whether the claim requires further construction. There is no ambiguity to the term “newly exposed LED surface” requiring construction because the term’s meaning is clear in the context of the claims and will be readily understandable to the jury.

Defendants’ proposed construction of “newly exposed LED surface” does not act to further clarify the already unambiguous claim language. The claimed process is not only set out clearly in

the claim, but it is further taught in the specification. For example, the specification teaches that laser liftoff causes separation of the LED GaN layer from the underlying sapphire layer:

Laser liftoff is applied (represented by **230**) to cause separation of LED GaN layer **200** from underlying sapphire layer **210**. The resulting structure after the step of laser liftoff is shown in FIG. 3. In the case of a Silicon Carbide wafer there is no need for the laser lift off and the structure contains the Silicon Carbide wafer. In the case of Silicon, an alternative option to laser lift off is the chemical etching of the Silicon wafer.

’137 Patent, 3:66-4:6. The claim language is consistent with this disclosure. Defendants appear to confuse the term “laser liftoff” with the result of applying laser liftoff. Dkt. 44 at 12. The claim term refers to the latter: i.e., “to cause separation of LED GaN layer 200 from underlying sapphire layer 210.” *See id.* Construing “newly exposed LED surface” to mean the LED surface exposed by “lifting off said substrate from said LED” as Defendants propose, would deviate from the term’s plain and ordinary meaning and erroneously narrow the claim. *See K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999) (“Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee.”).

Claim terms are generally given their ordinary and customary meaning as understood by a person of ordinary skill in the art when read in the context of the specification and prosecution history. *Thorner v. Sony Computer Entertainment America LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012). It is appropriate to depart from the plain and ordinary meaning of a claim term only where an applicant (1) “sets out a definition and acts as [its] own lexicographer,” or (2) “disavows the full scope of the claim term either in the specification or during prosecution.” *Thorner*, 669 F.3d at 1365. In this case, the applicant did neither.

A POSITA would understand the ordinary and customary meaning of terms “newly exposed LED surface” and “lifting off said substrate from said LED; forming a metal pad on the newly exposed LED surface” in the context of the specification. Exhibit A, ¶¶38-39. Defendants cannot identify anything in the prosecution history that rises to a clear intention to limit the scope

of “newly exposed LED surface” to “lifting off said substrate from said LED.” *See Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (“Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using ‘words or expressions of manifest exclusion or restriction.’”).

For at least the foregoing reasons, the Court should adopt the plain and ordinary meaning of the term “lifting off said substrate from said LED; forming a metal pad on the newly exposed LED surface,” or alternatively construe the term to mean “separating LED from substrate and forming a metal pad on newly exposed surface.”

IX. “METALLIZATION LAYER” TERMS

The phrases “an electrically conducting metallization layer in direct contact with at least a portion of each of a positively-doped surface and said negatively-doped surface of said semiconductor LED” and “depositing a metallization layer on a positively-doped surface of said positively-doped layer and said negatively-doped surface of said negatively-doped layer to provide electrical contact with said positively-doped layer and said negatively-doped layer of said LED” are easily understandable terms that do not require construction. There is no ambiguity to these terms requiring construction, and a POSITA would understand their plain and ordinary meaning in the context of the asserted claims.

Construing these terms to be restricted to “the same [electrically conducting] metallization layer” only, as Defendants propose, would deviate from the terms’ plain and ordinary meaning, conflict with the specification, and erroneously rewrite the claims. *See K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1364 (Fed. Cir. 1999) (“Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee.”). Moreover, Defendants cannot identify anything in the prosecution history that rises to a clear intention to limit the scope of the terms “an electrically conducting metallization layer” or “a metallization layer” to “the same [electrically conducting] metallization layer.” *See Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (“Even when

the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope”).

It is well-settled that the articles “a” and “an” carry the meaning of “one or more” in open-ended claims like claims 1 and 12 of the ’405 Patent that use the term “comprising,” and thus it would be improper as a matter of law to construe “an electrically conducting metallization” and “a metallization layer” as “the same [electrically conducting] metallization layer.” *See KCJ Corp. v. Kinetic Concepts, Inc.*, 223 F.3d 1351, 1356 (Fed. Cir. 2000) (“This court has repeatedly emphasized that an indefinite article ‘a’ or ‘an’ in patent parlance carries the meaning of ‘one or more’ in open-ended claims containing the transitional phrase ‘comprising.’”). “That ‘a’ or ‘an’ can mean ‘one or more’ is best described as a rule, rather than merely as a presumption or even a convention. The exceptions to this rule are extremely limited: a patentee must ‘evince[] a clear intent’ to limit ‘a’ or ‘an’ to ‘one.’” *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342 (Fed. Cir. 2008). Here, Defendants present no evidence that the applicant clearly intended to limit the term “an electrically conducting metallization layer” to “the same electrically conducting metallization layer,” and thus Defendants’ proposed construction should be rejected on this basis alone.

Defendants’ assertion that the claim language “confirm that the same metallization layer directly contacts (or is deposited on) both recited surfaces of the claimed LED” is wrong as a matter of law. The claim language requires only that: “an electrically conducting metallization layer” is “direct contact with at least a portion of each of a positively-doped surface and said negatively-doped surface” (claim 1); and (2) a metallization layer is deposited “on a positively-doped surface of said positively-doped layer and said negatively-doped surface of said negatively-doped layer to provide electrical contact with said positively-doped layer and said negatively-doped layer.” Nothing in the claim language precludes the use of more than one metal layer.

This is true regardless of whether the “same” metallization layer” is described in embodiments and shown in every figure in the ’405 Patent. Dkt. 44 at 14. As the Federal Circuit

has repeatedly held, “the fact that embodiments (or even every embodiment) in the specification depict a particular arrangement or structure does not require reading that arrangement or structure into the claims.” *Ethicon LLC v. Intuitive Surgical, Inc.*, No. 2020-1528, 2021 WL 3716397, at *4 (Fed. Cir. Aug. 23, 2021).

The prosecution history does not support Defendants’ narrow construction either. In particular, Defendants rely on a May 21, 2014, Office Action concerning U.S. Patent Application Pub. No. 2006/0073692 (“Yoshida”), which disclosed a “light-transparent p-electrode 110,” an “electrode 120,” and an “electrode 140.” Dkt. 44, Ex. G [0037-0039]. The applicant argued that none of the “light-transparent p-electrode 110,” the “electrode 120,” or the “electrode 140” were “an electrically conducting metallization layer” because they were not “in direct contact with either the p-GaN contact layer 108 or the n-GaN contact layer 104” Exhibit B, 58 (2014-09-22 Applicant Arguments at 12). Despite this, the applicant amended the claims to more particularly point out that the doped regions must be in direct contact with a metallization layer:

Claim 1 (before May 21, 2014 Office Action)	Claim 1 (after May 21, 2014 Office Action)
a first surface of said semiconductor LED being metallized with an electrically conducting metallization layer over at least a portion of said first surface;	<u>an</u> <u>first</u> <u>surface</u> <u>of</u> <u>said</u> <u>semiconductor</u> <u>LED</u> <u>being</u> <u>metallized</u> <u>with</u> <u>an</u> <u>electrically</u> <u>conducting</u> <u>metallization</u> <u>layer</u> <u>over</u> <u>in</u> <u>direct</u> <u>contact</u> <u>with</u> <u>at</u> <u>least</u> <u>a</u> <u>portion</u> <u>of</u> <u>each</u> <u>of</u> <u>a</u> <u>positively-doped</u> <u>surface</u> <u>and</u> <u>said</u> <u>negatively-doped</u> <u>surface</u> <u>of</u> <u>said</u> <u>semiconductor</u> <u>LED</u> , <u>said</u> <u>first</u> <u>surface</u> , <u>wherein</u> <u>said</u> <u>positively-doped</u> <u>surface</u> <u>is</u> <u>on</u> <u>an</u> <u>exposed</u> <u>portion</u> <u>of</u> <u>said</u> <u>positively-doped</u> <u>region</u> <u>of</u> <u>said</u> <u>semiconductor</u> <u>LED</u> <u>and</u> <u>said</u> <u>negatively-doped</u> <u>surface</u> <u>and</u> <u>said</u> <u>positively-doped</u> <u>surface</u> <u>are</u> <u>parallel</u> <u>with</u> <u>each</u> <u>other</u> ;

Exhibit B at 49 (2014-09-22 Claims). None of this evidence amounts to a clear disavowal of claim scope. *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1357 (Fed. Cir. 2004) (“A patentee may claim an invention broadly and expect enforcement of the full scope of that language absent a clear disavowal or contrary definition in the specification.”).

Notably, Defendant Seoul Semiconductor, Co. Ltd. agreed with LWS’ proposed construction when it argued in its Petition for *Inter Partes* Review of the ’405 Patent that the term “metallization” should be construed to mean “one or more metal layers applied to a device” and not “the same” metal layer as Defendants propose here. Exhibit G at 10-12 (IPR2021-01479 at Paper 1, 10-12). Just like Defendant Seoul Semiconductor, Co. Ltd. did in its Petition, LWS is not advocating that “an electrically conducting metallization layer” cannot be the same material or the same continuous layer, but only that it may be one or more non-continuous layers of the same material.

For at least the foregoing reasons, the Court should adopt the plain and ordinary meaning of these terms.

X. “WHEREIN SAID INTRINSIC LAYER IS BETWEEN SAID POSITIVELY-DOPED LAYER AND A FIRST SURFACE OF SAID LED IS IN DIRECT CONTACT WITH A SAPPHIRE LAYER”

Claim 12 is not indefinite because there is an obvious and correctable error in the claim. Despite Defendants arguments, the meaning of this claim term is not subject to reasonable debate. Consistent with the intrinsic evidence, it is clear that the applicant intended that the “intrinsic layer” recited in claim 12 is located between the two doped layers (i.e., the positively-doped layer and the negatively-doped layer):

“forming a light emitting device (LED) comprised of a positively-doped layer, an intrinsic layer, and a negatively-doped layer, wherein said intrinsic layer is between said positively-doped layer *and said negatively-doped layer*, and a first surface of said LED is in direct contact with a sapphire layer.”

’405 Patent, cl. 12 (phrase shown in red added).

The omission of the term “and said negatively-doped region” is an obvious clerical error that can be corrected by the Court in construing this term. *See CBT Flint Partners, LLC v. Return Path, Inc.*, 654 F.3d 1353, 1358 (Fed. Cir. 2011) (“It is well-settled law that, in a patent

infringement suit, a district court may correct an obvious error in a patent claim.”); *see also I.T.S. Rubber Co. v. Essex Rubber Co.*, 272 U.S. 429, 442 (1926) (“We concur in the finding of the District Judge that the omission of the word ‘rear’ was through a clerical error due to oversight and that both the counsel for the applicant and the examiner understood that it was contained in claim 8 as well as the others; and we are of opinion that the claim should be construed and have the same effect as if it had been included. This is not in any real sense, a re-making of the claim; but is merely giving to it the meaning which was intended by the applicant and understood by the examiner.”).

“A district court can correct a patent only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims.” *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003). In this case, there is no reasonable debate that the omission of the phrase “and said negatively-doped layer” was an inadvertent clerical error, and Defendants have not identified anything from the prosecution history that would suggest otherwise.

Indeed, the nature of this omission is apparent when claim 12 is read in light of the other claims of the ’405 Patent. Claim 1 is a system claim and claim 12 is a method claim, but it is nevertheless apparent when viewing two claims side by side that the applicant intended to claim an LED device having a PIN junction:

This omission is even more apparent when considering the next limitation in claim 12, “forming a recess in said positively-doped layer and said intrinsic layer of said LED so as to expose a negatively-doped surface of said negatively-doped layer,” which is also shown in claim 1 above.

The specification further confirms that the omission was an obvious and correctable error. For example, the ’405 Patent refers repeatedly and exclusively to an intrinsic layer disposed between an N-type doped layer and a P-type doped layer. ’405 Patent, 1:13-16 (“These LEDs

comprise a P-I-N junction device having an intrinsic (I) layer disposed between a N-type doped layer and a P-type doped layer.”); *id.*, 4:7-8 (“an intrinsic (I) semiconductor layer 305 in the middle, between the P and N type layers 301 and 303”); *id.*, cl. 1 (“wherein said intrinsic region is between said positively-doped region and said negatively-doped region”).

For at least the foregoing reasons, the Court should adopt LWS’ proposed construction.

XI. ORDERING OF STEPS 12[c], [e]-[g]

No construction of these terms is necessary. The Federal Circuit has been clear that “[u]nless the steps of a method actually recite an order, the steps are not ordinarily construed to require one.” *See Altiris v. Symantec Corp.*, 318 F.3d 1363, 1369 (Fed. Cir. 2003). The *Altiris* Court went on to hold that the test for determining whether the steps of a method claim that do not recite an order must nonetheless be performed in an order is to look at the logic and grammar of the claim as well as the intrinsic record. *See id.* In this case, the ordering of steps 12[c], [e]-[g] is evident from the claim language.

Only when a claim term does not possess any relevant, latent ambiguities, was not specially defined by the applicant in the specification, was not the subject of a disclaimer during prosecution, and is not overly technical or legalistic in nature, then the term need not be replaced with any new language during claim construction. *See O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008) (“We, however, recognize that district courts are not (and should not be) required to construe every limitation present in a patent’s asserted claims.”); *U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). None of these circumstances are present here.

The claim language makes clear that 12[c]: “depositing a metallization layer” must occur before 12[e]: “depositing a passivation layer,” which must occur before 12[f]: “defining a first contact hole in said passivation layer” and 12[g]: “defining a second contact hole in said passivation layer.” Generally speaking, the Court must “indulge a ‘heavy presumption’ that a claim term carries its ordinary and customary meaning.” *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d

1359, 1366 (Fed. Cir. 2002). Construing this claim any further risks overcomplicating already unambiguous language. *See U.S. Surgical Corp. v. Ethicon, Inc.*, 103 F.3d 1554, 1568, 41 U.S.P.Q.2d 1225 (Fed. Cir. 1997) (remarking that claim construction “is not an obligatory exercise in redundancy”).

As the parties agree to the order of the steps as claim 12 of the ’405 Patent already specifies, no construction is necessary.

XII. “THERMALLY CONDUCTIVE LAYER”

The parties dispute whether the claimed “thermally conductive layer,” which appears in claim 1 and 9 of the ’612 Patent, requires construction. Construction is necessary to clearly define the properties of the thermally conductive layer, which are both critical to the stated objectives of the ’612 patent. Because there is a dispute over the scope of this claim term, it must be construed by the Court; merely adopting an unspecified “plain and ordinary meaning” as Defendants propose would be insufficient. *See, e.g., Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1319 (Fed. Cir. 2016) (overturning a district court’s adoption of the “plain and ordinary meaning” for a claim term because that “left [a disputed] question of claim scope unanswered”) (citing *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008)). LWS’ construction is consistent with the intrinsic evidence and Federal Circuit law and would help clarify to the jury the proper scope of this claim term. As seen below, the specification description of the thermally conductive layer is nearly identical to LWS’s proposed construction.

“In other aspects, the semiconductor LED is affixed to said carrier wafer with an adhesive material which has the property of optical diffusion, transmission, reflection, or combination thereof. In another aspect, the thermally conductive layer comprises metal or an organic material with a physical property of high thermal conductivity.”

‘612, Col. 4, Lns. 8-15.

Defendants argue incorrectly that “Plaintiff’s construction introduces a subjective term of degree”, but as described in more detail below in the context of claim 4, high thermal conductivity is a well understood term in the field of materials science. Exhibit A, ¶¶41-42. A POSITA would

understand with reasonable certainty the scope of the claimed inventions. *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910, 134 S. Ct. 2120, 2129, 189 L. Ed. 2d 37 (2014).

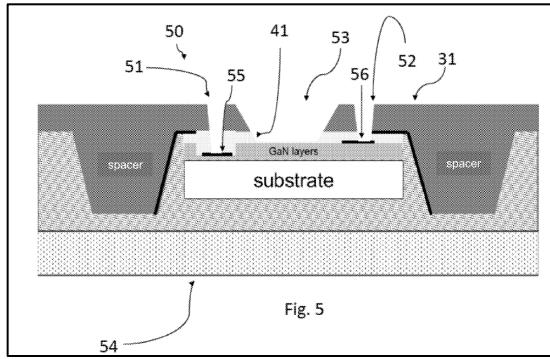
Defendants' also incorrectly argue that Plaintiff's proposed construction renders some of the dependent claims "superfluous". Dkt. 44 at 22. The opposite is true. Plaintiff's construction proposes that the thermally conductive layer comprises metal or an organic material. And dependent claims (e.g., claims 9 and 10) each separately claim one of these two embodiments.

XIII. "RELIEF"

The parties dispute whether the term "relief," which appears in claim 1 of the '612 Patent, means "thermally conducting hole" as LWS proposes, or simply "hole" as Defendants propose. Construction of this term is necessary because the parties have a genuine dispute over claim scope. *See 02 Micro*, 521 F.3d at 1360. The Court should adopt LWS' proposed construction because it is consistent with the intrinsic evidence.

For example, the specification teaches that there are two types of geometrical reliefs: (1) a via (hole), which is "an electrical connection between layers in a physical electronic circuit that goes through the plane of one or more adjacent layers"; and (2) a thermally conducting hole. '612 Patent, 9:4-19. The applicant described both types of reliefs to distinguish between them but stated that the thermally conducting hole is "pursuant to the present invention." *Id.*, 9:18-19. Although use of the phrase "the present invention" does not "automatically" limit the meaning of claim terms in all circumstances, such language must be read in the context of the entire specification and prosecution history. *See Rambus Inc. v. Infineon Techs. AG*, 318 F.3d 1081, 1094 (Fed.Cir.2003). In this case, the intrinsic evidence confirms that the phrase "the present invention" describes the invention as a whole.

First, the specification describes distinguishing features of both types of geometrical reliefs in the context of Figure 5 shown below:



'612 Patent, Fig. 5. The electrical connection vias (shown as 51 and 52) in Figure 5 "are etched through the remainder of the silicon wafer 31 and adhesion layer 41 to provide pathways to the electrical pads 55, 56 in the LED package 50." *Id.*, 9:11-14. The thermally conducting hole (shown as 53 in Figure 5) "is etched through the remainder of the silicon wafer 31 and at least part of adhesion layer 41 in a location proximate to the GaN layers of the LED package 50" and "preferably displaces much of the silicon and adhesive volume proximate the LED die." *Id.*, 9:19-24. A POSITA would understand from these teachings that a via provides different functionality (electrical connection) than a thermally conducting hole (heat dissipation). Exhibit A, ¶¶44-46.

In addition to their functionality, the patent describes the two types of reliefs as having different physical characteristics. For example, the patent teaches that "[i]n one embodiment, the surface area displacement of thermally conducting hole 53 is 250000 microns," but in other embodiments, "the area can be greater than 700 microns by 700 microns." *Id.*, 9:24-27. With respect to vias, the "diameters are in between 10 to 150 microns and preferably greater than 60 microns," and "[v]ia angles range from 45 to 90 degrees and preferably between 60 and 70 degrees." *Id.*, 9:14-17.

Based on these teachings, it is clear that the applicant intended the "relief" recited in claim 1 to be a thermally conducting hole. For example, claim 1 of the '612 Patent recites: "wherein the carrier wafer and the thermally conductive layer define a relief to expose at least a portion of the second LED surface." '612 Patent, cl. 1. This language is consistent with the

specification’s description of a thermally conducting hole and makes no mention of electrical pads. *Id.*, 9:23-24 (“It preferably displaces much of the silicon and adhesive volume proximate the LED die”). Dependent claims 11 and 12 further confirm that the “relief” recited in claim 1 is a “thermally conducting hole” because they both describe the surface area displacement of the relief and not the diameter or angles of a via. *Id.*, cl. 11 (“wherein the relief has a surface area displacement of 250,000 square microns”); *see also id.*, cl. 12 (“wherein the relief has a surface area displacement of at least 700 microns by 700 microns”). A POSITA would understand from this claim language read in light of the specification, which describes a thermally conducting hole in the same terms, that the “relief” recited in claim 1 is a “thermally conducting hole” based on the claimed characteristics. Exhibit A, ¶47; *see also* ’612 Patent, 9:24-27.

For at least the foregoing reasons, the Court should adopt LWS’ proposed construction for this claim term.

XIV. “HAS THE PROPERTY OF HIGH THERMAL CONDUCTIVITY”

The term “has the property of high thermal conductivity” is a term of art and Defendants’ do not state, much less prove by clear and convincing evidence, that a POSITA would not understand this term with reasonable certainty. *Nautilus*, 134 S. Ct. 2120, 2124 (2014); *See Akzo Nobel Coatings, Inc. v. Dow Chem. Co.*, 811 F.3d 1334, 1344 (Fed. Cir. 2016). In Akzo, the Federal Circuit held that one of ordinary skill in the art would understand that room temperature is implied for a viscosity measurement with no specified temperature. *Id.* A similar situation occurs here, in the context of the ’612 patent, entitled “Light Emitting Diode Package with Enhanced Heat Conduction”, a POSITA would understand the selection of an adhesive material which has “the property of high thermal conductivity.” Exhibit A, ¶¶48-52. In the field of materials science, Thermal conductivity is a measure of a materials ability to pass heat through it. *Id.*, ¶50 Materials with a high thermal conductivity can effectively transfer heat and readily take up heat from their environment. *Id.*, ¶51. Poor thermal conductors resist heat flow and obtain heat slowly from their surroundings. *Id.*, ¶51. Further, as taught by the written descriptions, “high thermal

conductivity" is not an indefinite term incapable of understanding, as Defendants incorrectly suggest; rather, "high thermal conductivity" is a proper and broadly defined term, readily understood in view of the teachings of thermal conductivity within LED devices. *See, e.g., Navico Inc. v. Garmin Int'l, Inc.*, No. 2:16-cv-190-JRG-RSP, 2017 U.S. Dist. LEXIS 66230, at *36-37 (E.D. Tex. Feb. 21, 2017) ("breadth is not indefiniteness"). Additionally, The Federal Circuit has explained that words of degree – even the term "high" – are sufficiently definite under the Nautilus standard:

[R]elative terms and words of degree do not render patent claims invalid. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014).... For example, in 1923, the Supreme Court "upheld as definite a patent for an improvement to a paper-making machine, which provided that a wire be placed at a 'high' or 'substantial elevation.'" *Nautilus*, 134 S.Ct. at 2129 n.5 (citing *Eibel Process*, 261 U.S. at 58, 43 S.Ct. 322). The Court explained that these relative terms—"substantial" and "high"—were sufficiently definite because "'readers . . . skilled in the art of paper making and versed in the use of the . . . machine' would have 'no difficulty . . . in determining . . . the substantial [elevation] needed' for the machine to operate as specified." *Id.* (quoting *Eibel Process*, 261 U.S. at 65-66, 43 S.Ct. 322)."

One E-Way, Inc. v. Intern. Trade Com'n, 859 F.3d 1059, 1063 (Fed. Cir. 2017).

Defendants argue that a POSITA would not be able to determine what would be considered a "high thermal conductivity" because the '612 Patent provides only two exemplary conductivity values. Dkt. 44 at 25. This is not a credible position as the specification is not void of information to inform a POSITA as to the meets and bounds of the adhesive layer. In fact, the specification provides sufficient guidance for a POSITA to understand what is meant by a property of high thermal conductivity for the adhesion layer. '612, Col. 9, Lns. 46 – 49 ("In the context of the embodiment where thermal conductance of the adhesion layer 41 is above 1 W/mK, some of the adhesion layer 41 can remain in the thermally conducting hole 53."); see also '612, col. 7, 38-40 ("The present embodiment can also be used in conjunction with a LED reflector chip 20 in accordance with the detailed description of FIG. 2. As a metric for suitable performance, heat conductance of 3 W/mK or more is sufficient. Adhesive layer 41 can also be designed to be easily

removed in an etching or ashing process.”). The first embodiment, whereby thermal conductance of the adhesion layer is above 1 W/mK, relates to Figure 4. According to the specification, “FIG. 4 portrays an exemplary LED package 40 with silicone encapsulated peripheral reflectors.” ‘612, 7:22-23. In this embodiment the adhesive layer is optimized to provide both heat conduction and light reflection. ‘612 Patent, 7:26-28. The second embodiment, is in the specification as follows:

[I]n another embodiment the LED passivation layer such as SiO₂, will act as the etch stop layer In the context of the embodiment where thermal conductance of the adhesion layer 41 is above 1 W/mK, some of the adhesion layer 41 can remain in the thermally conducting hole 53.

‘612 Patent, 9:44-48.

Here, the thermal conductivity threshold of 1 W/mk is used in the event that part of the adhesion layer remains in the thermally conducting hole. *Id.* As such, both disclosed embodiments in the specification define a threshold for “high thermal conductivity” allowing a POSITA to not only understand what such a term requires, but also allows a POSITA to make a design choice. Terms of degree are only indefinite if they are used without any supporting context. “Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed.Cir.2014). One way for patents to provide sufficient context for terms of degree is to give examples of what qualifies. *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1260 (Fed. Cir. 2014) (“For other terms like, for example, terms of degree, specific and unequivocal examples may be sufficient to provide a skilled artisan with clear notice of what is claimed.”); See also *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1334–35 (Fed.Cir.2010) (finding the phrase “not interfering substantially” to be definite where intrinsic evidence provided multiple examples that would allow a skilled artisan to determine whether a particular chemical bond linkage group would “interfer[e] substantially” with hybridization).

Moreover, Defendants' cited cases are inapposite to the disclosures in the '612 Patent. And “[t]erms of degree or approximation are not inherently indefinite. *See Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014) (“[A]bsolute or mathematical precision is not required.”). Such terms have not been found definite where they provide “enough certainty to one of skill in the art when read in the context of the invention.” *Id.* The specification provides a standard for two disclosed embodiments that would allow a POSITA to contextualize this term found in Claim 4 of the '612.

Additionally, Defendants' fail to meet their burden to show that this claim, in light of the intrinsic record, fails to inform those skilled in the art about the scope of the invention with reasonable certainty. A party seeking to invalidate a patent must overcome a presumption that the patent is valid. See 35 U.S.C. § 282; *Microsoft Corp. v. i4i Ltd. Partn'p*, 131 S. Ct. 2238, 2243 (2011). This presumption places the burden on the challenging party to prove the patent's invalidity by clear and convincing evidence. *Microsoft*, 131 S. Ct. at 2243. Close questions of indefiniteness “are properly resolved in favor of the patentee.” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1348 (Fed. Cir. 2005); *Exxon Research & Eng'g Co. v. United States*, 265 F.3d 1371, 1380 (Fed. Cir. 2001).

XV. “CARRIER LAYER”

The parties dispute whether the claimed “carrier layer,” which appears in claim 1 of the '822 Patent, requires construction. Construction is necessary to clearly define the properties of the carrier layer because those properties are critical to the stated objectives of the patent. Because there is a dispute over the scope of this claim term, it must be construed by the Court; merely adopting an unspecified “plain and ordinary meaning” as Defendants propose would be insufficient. *See, e.g., Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1319 (Fed. Cir. 2016) (overturning a district court's adoption of the “plain and ordinary meaning” for a claim term because that “left [a disputed] question of claim scope unanswered”). LWS' construction is consistent with the intrinsic evidence and the understanding of a POSITA, would help clarify to

the jury the proper scope of this claim term. For example, the specification describes that the “carrier layer” is both “thermally and electrically conductive”:

FIG. 2 illustrates an exemplary light emitting device or LED 20 including a semiconductor (e.g., GaN) layer 200 disposed on a sapphire, or Silicon wafer 210. The LED layer 200 is further coupled on one side to a thermally and electrically conductive carrier layer 220, which may be Copper or Silicon.

’822 Patent, 3:62-67. Thermal conductivity of the carrier layer is critical in an LED device in order to facilitate an LED’s heat removal. *Id.*, 1:64-67 (“In addition, the carrier substrate greatly increases the thermal resistivity of the device and adversely affects its heat removal characteristics.”); *see also* Exhibit A, ¶44-45. Electrical conductivity of the carrier layer is also critical in an LED device to allow electrical contact with a first and second doped layers of the LED “to bias the LED using a bias voltage applied between said first and second doped layers of the LED.” ’822 Patent, 2:34-43 (“the method comprising forming a plurality of doped layers in a light emitting device (LED) disposed on conductive carrier layer; forming a recess in said conductive carrier layer and said LED so as to allow electrical contact with a first doped layer of said LED at a depth of said first doped layer in said LED; providing electrical contact to a second doped layer of said LED proximal to said conductive layer so as to bias the LED using a bias voltage applied between said first and second doped layers of the LED”); *see also* Exhibit A, ¶¶ 56-59.

Moreover, a POSITA would understand that the term “carrier layer” in the context of a semiconductor device would generally include non-thermally and non-electrically conductive layers. Exhibit A, ¶¶ 56-59. However, a POSITA would understand that a carrier layer used in the context of an LED semiconductor device would need to be both thermally and electrically conductive in order for the LED device to operate correctly. Exhibit A, ¶¶ 56-59. “[T]he person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the

specification.” *See Phillips* at 1313. It is readily understood by a POSITA that “carrier layer” should be construed as “a thermally and electrically conductive layer coupled to the LED.”

The Court should therefore adopt LWS’ proposed construction for this claim term to clarify the proper scope and meaning of this term.

XVI. “ELECTRICAL CONTACT IN ELECTRICAL COMMUNICATION WITH SAID FIRST SURFACE OF SAID SEMICONDUCTOR LED”

The core of the dispute between the parties is the construction of a commonly used, well understood phrase within the disputed term of “electrical communication.” Defendants propose to rewrite this well understood term under the guise of “unconventional usage.” Dkt. 44-28-29. However, Defendants provide no reason to depart from the well understood meaning and rewrite “electrical communication” to “conduction path.” The inventor of the ‘822 Patent chose to describe and claim his invention in a particularized where – where the claimed electrical contact is in electrical communication with the first surface of said semiconductor LED. It is a “bedrock principle of patent law” that the words of the claims themselves define the scope of the patented invention and the words of a claim are generally given their ordinary and customary meaning. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc). Defendants do not deny that “electrical communication” is well understood, but instead attempt to support their construction under the guise of “unconventional usage,” without any type of caselaw support or reasoning.

Defendant’s proposed construction of “conduction path” is unavailing, as this construction improperly narrows the understood scope of electrical communication. Nothing in the specification limits the term “electrical communication” to conduction path, and a POSITA would understand electrical communication to be referencing the flow of electrons, not a conduction path. Exhibit A, ¶¶ 60-63. Defendant’s attempt to limit and rewrite this term with certain embodiments from the specification, which is improper. “Courts do not rewrite claims; instead, we give effect to the terms chosen by the patentee.” *K-2 Corp. v. Salomon S.A.*, 191 F.3d

1356, 1364 (Fed. Cir. 1999). Further, the original claims as filed by the Patent Owner used the same language, understood by the Examiner and not subject to any type of disclaimer or dispute during prosecution, underscoring that the term “electrical communication” is well understood with its ordinary meaning. *See Aventis Pharm., Inc. v. Amino Chems. Ltd.*, 715 F.3d 1363, 1373 (Fed. Cir. 2013) (“There is a heavy presumption that **claim** terms are to be given their ordinary and customary meaning.”). There was no dispute or narrowing of the term “electrical communication” during prosecution. During prosecution, the Examiner in fact found lack of written support for a separate term that utilized “electrical communication with,” yet found no issue with this term or its plain meaning. Exhibit I at 72. Despite this, Defendants’ position is that the patent clearly provides an electrical contact that “routes electrical current.” Dkt. 44, 36. Notably, this isn’t Defendants’ position, and Defendants instead provide no reasoning or support for their injection of “conduction path” into the claim term. Plain and ordinary meaning should apply.

The Court should therefore adopt LWS’ proposed construction for this claim term.

XVII. CONCLUSION

For the foregoing reasons, LWS respectfully request that this Court adopt LWS’ proposed constructions.

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Respectfully Submitted,

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CERTIFICATE OF SERVICE

The undersigned certifies that on January 18, 2022, counsel of record who are deemed to have consented to electronic service are being served with a copy of this document by electronic mail.

/s/ Bradley D. Liddle _____